the semantics of situations

Semantics 3, UCLA Linguistics

Spring 2022

---

1 situations: the rationale

- some combination of {possible worlds, times/events, and topics} is both too weak and too strong to model natural language semantics
  - too weak: some contexts in which they need to covary

    (1) If, whenever it snowed, it had snowed much more than it actually did, the town plow would have removed the snow for us.

  - too strong: some contexts in which we need something finer grained[1]

    (2) Everyone is asleep and is being monitored by a research assistant.

- some morphosyntactic claims:

> "Since natural languages have syntactically represented individual variables and it would be surprising if they used two different equally powerful quantification mechanisms, it seems to be at least a good bet that there are syntactically represented situation variables in natural languages. [...] They are syntactically represented, even though they might happen to be unpronounced. The syntactic representation of situation variables is investigated in Percus (2000); Keshet (2010) and Schwarz (2012)."

2 situations: the formalism

- modality "relates two situations s and s' in a context c just in case s and s' are equivalent with respect to the information available in c... *epistemic contextualism*"

  (3) $[\![\text{might}]\!] = \lambda p \lambda s \exists s' [\text{Acc}_c(s)(s') \wedge p(s')]$

  (4) $[\![\text{The bear might be a grizzly}]\!] = \lambda s \exists s' [\text{Acc}_c(s)(s') \wedge \text{grizzly}(\iota x.\text{bear}(x)(s'))(s')]$

- an innovation to help with topic (and Soames' worry above): a **topic situation** and a salient **resource situation**, related via the part relation $\leq_p$

  (5) $[\![\text{Everyone is asleep and is being monitored by a research assistant.}]\!] =$
  $\lambda s \forall x [[\text{person}(x)(s') \wedge s' \leq_p s] \rightarrow [\text{asleep}(x)(s) \wedge \exists y [\text{RA}(y)(s) \wedge \text{monitoring}(x)(y)(s)]]]$

  (6) $[\![\text{Whenever a donkey appeared, it was greeted enthusiastically}]\!] =$
  $\lambda s \forall s' [[s' \leq_p s \wedge s' \in \text{MIN}(\lambda s \exists x [\text{donkey}(x)(s) \wedge \text{appeared}(x)(s)])] \rightarrow \exists s'' [s' \leq_p s'' \wedge \text{greeted}(\iota x.\text{donkey}(x)(s'))(s'')]]$

[1] This is Soames' (1986) objection to a variation of Barwise & Perry's (1983) example.

- a notion of a 'minimal situation'

  (7) A situation is a minimal situation in which a proposition p is true iff it has no proper parts in which p is true.

  - but we get 'maximal' interpretations of donkey sentences in certain contexts: mass nouns, (modified) numerals, negative quantifiers

    (8) a. When snow falls around here, it takes ten volunteers to remove it.
    b. Whenever there are between 20 and 2000 guests at a wedding, a single waiter can serve them.
    c. Whenever nobody showed up, we canceled the class.

- situations: the mereology

  - parts of a possible world w form a join semi-lattice with a maximal element w
    - part relation: $s \leq_p s'$
    - sum relation: $s + s' = s'$
    - definition: $s \leq_p s' \leftrightarrow s + s' = s'$
  - one notion of truth in a situation, then:

    (9) **exemplification**:
    A situation s exemplifies a proposition p if whenever there is a part of s in which p is not true, then s is a minimal situation in which p is true.

  - this doesn't get things right for weakly true statements though (e.g. There are two teapots)
  - what is the empirical payoff for differentiating between situations that exemplify vs. verify a proposition?

- counting individuals

  (10) $[\![\text{There are three teapots}]\!] = \lambda s \exists x[x \leq_p s \wedge |\{y : y \leq_p x \wedge \textsf{teapot}(x)(w_s)\}| = 3$

  - a worry about teapots chipping... why wouldn't this usually be a worry?
  - what's the relationship to Krifka's notions of homogeneity / quantization / cumulativity of reference / monotonicity to the part/whole structure?

    (11) **counting principle**
    A counting domain cannot contain non-identical overlapping individuals.

- a disanalogy with negative quantifiers:

  (12) $[\![\text{There is no teapot}]\!] = \lambda s \neg \exists x[\textsf{teapot}(x)(s)]$

3 on the comparison to event semantics

- built-in minimality condition

> The predication... is standardly read as "e is a swim by Ewan". Crucially, this formula is not understood as "e is an event that contains a swim by Ewan" or as "e is an event in which Ewan is swimming". In other words, unlike the basic predications in situation semantics, Davidsonian basic predications have a built-in minimality condition. This is a major difference between situation semantics and Davidsonian event semantics, maybe the difference."

- resulting worry:
  - we have to add maximality operators to the semantics of sentences like *Ewan swam for 10 hours*
  - (is this an empirical worry? if not, what levels is it on?)
- proposals to combine situation and event semantics for some constructions:

(13) ⟦Whenever a man rides a donkey, the man gives a treat to the donkey⟧
$= \lambda s \exists x \exists y[\mathsf{man}(x)(s) \wedge \mathsf{donkey}(y)(s) \wedge \exists e[e \leq_p s \wedge \mathsf{ride}(y)(x)(e)]]$

references

Barwise, J. and Perry, J. (1983). *Situations and attitudes*. MIT Press.
Keshet, E. (2010). Situational economy. *Natural Language Semantics*, 18:385–434.
Percus, O. (2000). Constraints on some other variables in syntax. *Natural Language Semantics*, 8:173–229.
Schwarz, F. (2012). Situation pronouns in determiner phrases. *Natural Language Semantics*, 20:431–475.
Soames, S. (1986). Incomplete definite descriptions. *Notre Dame Journal of formal logic*, 27:349–375.